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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,451

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

11/04/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,451	Applicant(s) SUGIYAMA ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-12 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/29/07, 3/5/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-8, 13 and 14 in the reply filed on August 5, 2009 is acknowledged.
2. Claims 9-12 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on August 5, 2009.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-8, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 3; claim 3, line 5; claim 7, line 3; claim 8, line 5, refers to a "pre-treatment step", but it should be clarified what the pre-treatment step occurs before – the electroless plating?, some other step? For the purpose of examination, the Examiner

has treated the pre-treatment as occurring before an electroless plating, but applicant should clarify what is intended.

Claim 1, line 5; claim 3, line 7, "good solvent" is unclear what is intended. Is it any solvent that allows the claimed amount of swelling? Or is it something else? For the purpose of examination, the Examiner has treated the "good solvent" as being any solvent that allows the claimed amount of swelling, but applicant should clarify what is intended.

Claim 3, lines 10+; claim 8, lines 10+, are the "adsorption step" and the "reduction step" the previously referred to electroless plating, or some other step? For the purpose of examination, the Examiner has treated these steps as the electroless plating, but applicant should clarify what is intended.

The other dependent claims do not cure the defects of the claims from which they depend.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-5, 7, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fedkiw, Jr (US 4959132) in view of the admitted state of the prior art.

Claims 1, 2, 3, 5, 7, 8: Fedkiw teaches a method for electroless plating (where plating occurs by reducing a metal complex to form a metal film). Column 2, lines 15-40. The substrate is a polymer electrolyte, and can be in the form of a solid polymer membrane of a perfluorosulfonic acid polymer such as NAFION. Column 4, lines 25-40. Fedkiw provides that the polymer electrolyte is desirably swelled using a co-solvent in conjunction with an ionic salt of the selected metal to form the film to thereby increase the loading level and lower diffusional resistance therein (and thus can be described as swelled with (1) a solution containing a good solvent and (2) a solution containing salt). Column 2, lines 49-60. Fedkiw provides forming the metal film by the electroless process of impregnating a metal salt of the desired metal such as platinum in a cosolvent such as methanol/water (thus an aqueous solution) and adsorbing the

metal salt (metal complex) into the polymer electrolyte. Column 4, lines 35-50. Then, the polymer electrolyte is contacted with a reductant solution to reduce the metal complex to the metal(0) state and form the metal film. Column 2, lines 30-40, column 4, lines 50-65.

Fedkiw teaches all the features of these claims except (1) that the swelling step is pretreatment before an electroless plating and (2) that the swelling is at least 110% of the thickness of the polymer electrolyte. However, the admitted state of the prior art teaches that it is well known to provide a electroless metal plating on a polymer electrolyte by a process of immersing the polymer electrolyte in water to swell it, adsorbing a metal complex such as a platinum complex into the polymer electrolyte in a aqueous solution, and reducing the metal complex with a reducing agent – where the adsorption/reduction steps are repeated six or more times to provide sufficient amounts of metal on the polymer electrolyte. See pages 2-3 of the present specification. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to (1) modify Fedkiw to perform multiple adsorption/reduction cycles on the polymer electrolyte to provide a desired amount of metal on the polymer electrolyte as suggested by the admitted state of the prior art is conventional in the practice of adsorption/reduction electroless plating. Since any adsorption/reduction cycle can be considered an electroless plating step, the first adsorption/reduction cycle of Fedkiw using the swelling with solvent/salt can be considered a pretreatment to the later adsorption/reduction cycles and therefore meets the requirements of the claims of

providing a swelling pretreatment with solvent and/or salt. (2) As to the amount of swelling from the solvent/salt solution, it would have been obvious to one of ordinary skill in the art to perform routine experimentation to optimize the amount of swelling done with the solvent/salt solution of Fedkiw, as Fedkiw teaches to use polymer material (NAFION) and solvent (methanol) described by applicant as achieving the desired swelling, and also indicates swelling is to increase loading level (column 2, lines 50-55) and solution concentration and time of immersion, among other factors, are to be controlled to achieve desired loading (column 4, lines 40-50), indicating swelling would be a result effective variable to be controlled with solution control to optimize loading, and “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.” In *re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Claims 4, 13: As Fedkiw teaches that the same polymer (NAFION) electrolyte and same solvent (methanol) (column 4, lines 30-50) can be used as described by applicant, the Examiner understands that the methanol use described would inherently provide reducing the degree of crystallization as claimed. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In *re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

8. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fedkiw in view of the admitted state of the prior art as applied to claims 1-5, 7, 8 and 13 above, and further in view of Burch (US 5024858).

Fedkiw in view of the admitted state of the prior art teaches all the features of these claims except the solvent being a mixed solution of a basic salt and methanol. Fedkiw does teach that the polymer electrolyte can be an ion exchange resin and that the solution can include methanol. Column 4, lines 25-50 (note the material of the substrate).

However, Burch teaches that it is well known, when treating polymers with adsorption/reduction processes (column 4, lines 40-55) that the polymers can be swelled by using a combination of both a solvent and a base in the form of a basic salt (see column 4, line 55 through column 5, line 25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fedkiw in view of the admitted state of the prior art to further provide a basic salt in the metal salt/methanol/water solution as suggested by Burch to increase swelling of the polymer, as Fedkiw in view of the admitted state of the prior art provides swelling of the polymer using a solvent solution and Burch teaches that desirable swelling can also be provided by further adding basic salts to a solvent solution.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/
Primary Examiner, Art Unit 1792